REMARKS

Reconsideration of this patent application is respectfully requested in view of the foregoing amendments, and the following remarks.

The amendments to this patent application are as follows. The present Specification is being amended on Page 1 in order to correct an error in the "Cross Reference To Related Applications." Also, the present Specification on Page 1 and on Page 3 was amended in order to delete any reference to Claim 15. Also the present Specification was amended in the paragraph bridging pages 2 to 3 to cancel "problem" and to replace with the term "object."

The amendments to the claims are as follows. Each of the claims 15 to 27 was amended in order to cancel "characterized in that" and to replace with the word "comprising." Each of claims 18, 22 and 26 was rejected as being indefinite. Thus claim 18 was amended to cancel the phrases based upon "in particular." This cancelled language was re-added to the present application in new claim 29. Therefore, claim 22 was amended to cancel "i.e." This cancelled language was re-added to the present application in new claim 30. Hence, claim 26 was amended to cancel language related to "in particular."

This cancelled language was re-added to the present application in new claim 31. In addition, Claim 28 has been rewritten as an independent claim.

For all these reasons, the Specification and all the claims are now in complete compliance with the requirements of 35 U.S.C. 112. Withdrawal of this ground of rejection is respectfully requested.

The Applicants comment upon the prior art rejection of the claims as follows.

It is respectfully submitted that the present invention is not obvious from any combination of *U.S. Patent No. 2,266,262* (to *NARAYAMA*) and *U.S.Patent No. 4,352,772* (to *BEZNER*) for the following reasons:

The present invention is directed to a method of joining a first component (6) made of plastic to a second component (9) made of plastic, where the first component (6) is introduced into an injection mold with at least a connecting section where the connection to the second component (9) is to be formed, the second component (9) being produced by integral molding of plastic onto the connecting section (12) of the first component (6), one surface (13) of the connecting section (12) being wetted at least partially

by the plastic of the second component (9), comprising

at least one bonding body (14) is formed on the surface (13) of the connecting section (12) which is provided for wetting by the plastic of the second component (9), said bonding body being fixedly connected to it and designed so that it melts in integral molding of the plastic of the second component (9) due to the thermal energy of the integrally molded plastic and it melts with the integrally molded plastic, whereupon the bonding body (14) is at least partially subsumed into the integrally molded plastic and becomes integrated into the integrally molded component (9).

When a second plastic construction element is bonded by injection molding to a first plastic construction element, what may occur under certain circumstances in the area where these two elements are joined is that the surface of the plastic material of the first construction becomes soft and will melt in that area. Then it will be fused with the plastic material of the second construction element that is bonded to it in a material - or substance-locked manner. However, in order to produce such a material-or substance-locked bond between the construction elements, the connection area or section of the first construction element has to be preheated before the second construction element is coated onto the first one. Alternatively or additionally, the viscosity differences between the plastic materials to be joined

must not be excessively large. Alternatively or additionally, the temperature ranges or temperature windows within which the plastic materials to be joined can be processed must not be too small.

If, for example, a plastic which is to be molded has a very narrow temperature range in which it can be processible, the molded-on plastic of the first construction element will cool off very rapidly. Hence the surface of the first construction element will cool off to such a degree that it is no longer possible to melt the first construction element and to mix the two plastics. No material-locked bond will occur in that case.

Such a substance - or material-locked bond is beneficial in connection with a vacuum system, because the bond has to be pressure-proof and gas-tight. Also, this bond is subjected to high-frequency oscillations or vibrations in that connection. As opposed to this, a form-locked connection only has the property of high strength versus tensile stress. In order to produce such a form-locked connection, it suffices to provide the construction element that is being coated with a suitable form. In this way, it is possible to anchor the construction element that is molded on in a form-locked manner.

FIGS. 1, 2, 3, 6 and 8 of *NARAYAMA* show how a prior art connection is produced. See, for example, FIG. 1 of *NARAYAMA*, where the projections 32 that are protruding outwards and extending all around in the form of rings are formed in the connection areas 34 of the tubes T. When the flange 30 is attached, these protrusions are anchored in the flange 30 in the manner of barbs. However, this prior art reference provides no indication or clue at all that would suggest that the protrusions 32 are in purpose formed in such a manner that they will melt when the flange 30 is attached. There is no teaching that they will be joined by fusing with the plastic injected thereon. On the contrary, when the flange is attached, the protrusions 32 remain substantially completely preserved, and have to be so preserved because they are expected to effect the desired form-locked anchoring within the flange. This is particularly illustrated in FIG. 1, where the protrusions 32 are shown to be completely unchanged after the flange 30 has been mounted. Compare also FIG 12, where a protrusion with a rectangular profile has been coated by injection molding.

Thus the concept of the present invention of providing binding bodies in the area of connection that are more or less dissolved in the injection process in order to be united or fused with the melt that is injected thereon, is entirely undisclosed

from *NARAYAMA* and consequently cannot be derived from *NARAYAMA*.

The deficiencies of the primary reference *NARAYAMA* are not overcome by the disclosure of the secondary reference to *BEZNER*. FIGS. 1 to 14 of *BEZNER* show a distributor element, in connection with which a manifold 16 is attached by injection molding to the ends of a plurality of the tubular element 5, which are arranged next to each other. It is stated in *BEZNER* in column 4, in lines 44 to 48 that the injection molding process is carried out at a high pressure and at a high temperature. It is also stated that a strong bond is obtained between the tubular element 5 and the manifold 16 that is bonded to that tubular element 5 by injection molding. In column 5, lines 10 to 12, of *BENZER* it is stated that complete fusion of the two halves of the manifold 16 is obtained within the zone of contact.

According to *BEZNER*, in column 5 in lines 47 to 50 the same types of plastic materials are bonded to each other by injection molding. Thus it is readily possible at the specified high pressures and temperatures to achieve a melting-on or fusion in the area of the zone of contact. It is therefore possible to obtain a fused connection because these two plastics are the same material. However, this fused connection is accomplished due to the melting of the participating, wetted surfaces, i.e. by melting

the outer side of the tubular element 5. According to the discussion in Applicant's Specification in the "Background Of The Invention," however, such melting and thus the formation of a fused bond can readily be obtained when plastics with a relatively low viscosity and/or plastics with a relatively large temperature range for their processing are joined by injection molding.

As previously pointed out, *BEZNER* uses identical plastics for the tubular elements and the manifold. Furthermore, with *BEZNER*, the aim is to preserve the contour and the structure of the tubular elements, which is particularly clearly shown in FIGS. 4, 5 and 9. The coated ends of the tubular elements 5 are preserved with almost no change to them, so that the melting processes are exclusively limited to the surface of the tubular elements. *BEZNER* does not teach any dissolution of the ends of the tubular elements 5 due to the injection molding process. Thus *BEZNER* does not teach a mixing of the dissolved or molten ends with the melt injected onto these ends. Also this result is not desired in the *BEZNER* patent.

The concept of the present invention is to make provision on the surface of the connection section of the first construction element for a binding body. This binding body is formed in such a way that it will melt when the second construction elements are

injected onto it. Thus binding body fuses with the plastic injected onto it and is deformed thereby, so that this binding body is at least partly integrated or dissolved in the plastic coated onto it. Then it will form an integral component of the construction element that is bonded to it by injection molding. This inventive concept as claimed is alien to *BEZNER*.

In summary, it can be stated that barbs, anchors and the like are known from *NARAYAMA* that permit a form-locked connection or bond when the second construction element is attached by injection molding. Furthermore, it is known from *BEZNER* that when a plastic construction element is attached to another plastic construction element by injection molding under suitable conditions (preheating, viscosity ranges, processing temperatures), a material-or substance-locked bond may be formed also on the surfaces provided the plastic of the coated construction element can heat up in a suitable manner. However, the aforementioned suitable conditions are not always present, so that a material - or substance-locked bond cannot be achieved in the absence of these conditions.

The solutions to these prior art problems are provided by the invention, which nonetheless permits producing a substance-locked bond. These solutions are not obvious from a combination of

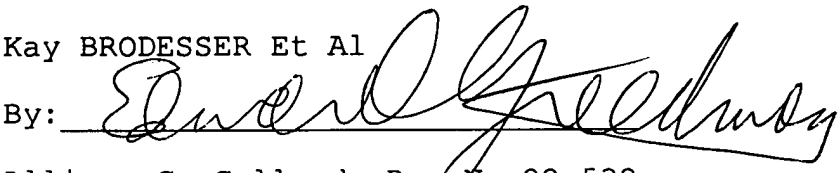
NARAYAMA and *BEZNER* because neither *NARAYAMA* nor *BEZNER* provide any teachings that suggest that binding bodies that are formed in such a manner that they will melt by the thermal energy of the one plastic that is coating the other plastic. There is no teachings of fusing with the plastic that is being coated, whereby the binding bodies are at least partially integrated into the plastic that is being coated. Hence there is no teachings of having the coating being integrated into the construction element that is being coated. In light of the fact that such a binding body is neither known from *NARAYAMA* nor from *BEZNER*, the present invention as claimed is novel under 35 U.S.C. 102 and is based on patentable subject matter under 35 U.S.C. 103.

Hence these prior art references fail to teach the invention of claim 15. Thus these prior art references also fail to disclose the features of Claim 21, wherein the two plastic materials have very different viscosities. Also, there is no prior art disclosure of the fiber-enforced plastic of Claim 26.

In summary, claims 15 to 28 have been amended, and new claims 29 to 31 have been added. In view of these amendments, it is firmly believed that the present invention, and all the claims, are patentable over all the prior art applied by the Patent Examiner under 35 U.S.C. 103. A prompt notification of allowability is respectfully requested.

Respectfully submitted,

Kay BRODESSER Et Al

By: 

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Enclosure: 1) Petition for 2 Month Extension of Time for Large Entity.
2) Copy of Extension of Time

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on November 21, 2003.

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